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PERSPECTIVES ON NEW TECHNOLOGIES FOR PREVENTING AND DETECTING FALLS IN THE ELDERLY

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Background: Considering the challenges and benefits inherent to the Internet of Things for the elderly, the use of wearable devices to monitor health parameters, especially the risk of falls, could promote optimal conditions or prevent the deterioration of health conditions in aging. The use of these devices in the mapping of movement and gestures, loss of balance, postural changes, movement speed or loss by period of time, in daily tasks, in one or more movement axes, may determine gait parameters. In monitoring health conditions and the environment, in identifying the risk of falling when traveling across different terrains, slopes of roads, ramps, steps of different heights and dimensions, it may trigger a potential alert capable of promoting the perception of obstacles or barriers, minimizing the impact of coping with them and avoiding a fall, given the physical condition of the elderly person, in relation to the adversity of the environment.
Objective: Know the new technologies, wearable and non-wearable sensors, for detection and prevention of falls in the elderly.
Methods: A systematic mapping of the literature was carried out in the Virtual Health Library (VHL), Web of Science, Pubmed, Embase and Medline databases in March 2023.
Results: New technologies, wearable sensors and connected applications, in promoting the lives of the elderly, providing support for daily activities, is in increasing evolution. The technologies for detecting falls stand out, an important marker of the functional decline of the elderly, associated with sensory, neuromuscular or osteoarticular deficiencies. Different types of sensors and monitoring and alarm systems have been developed and can be used to alert caregivers. Sensors are electronic devices that allow transforming nature from an observed physical value into an exploitable digital value. The devices to activate an alarm are based on the monitoring of motor activity through one or several sensors, basic elements of data acquisition systems, informing the position of permanence of the elderly person after a fall. There is a diversity of sensors related to the collection of data on the physiological state, such as temperature, heart and respiratory rate, blood pressure; and movement measurement, such as accelerometers, gyroscopes, magnetometers. Also, geolocation and environmental measurement (audio and video). For fall detection, wearable sensors are more effective because they can identify changes in acceleration, planes of movement or impact, not being limited to a restricted area of movement of the elderly. These sensors can be located in shoes, insoles and on the wrist, registering movement; in belt, refer to attitude and direction; on a keychain or pendant with an alarm button, they alert an emergency; all connected to the app via smartphone.
Conclusion: Regarding sensors intended for the prevention or detection of falls, wearable and non-wearable sensors stand out, all with good results when tested in actions of daily life.
Implications: The technological variety intended to support the elderly, particularly in the prevention of falls, is promising. Challenges for adoption at scale seem to be the obstacle to important results in a real-life context.
Keywords: Elderly, Internet of Things, Falls

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PHYSICAL PERFORMANCE, MUSCLE STRENGHT AND ENDURANCE IN ADULTS AND ELDERLY PEOPLE WITHOUT PREVIOUS DISABILITIES AT HOSPITAL DISCHARGE FOR COVID-19

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Background: The COVID-19 pandemic has had an unprecedented impact on our health services, the population, society, and the economy. COVID-19 poses a risk of serious illness, hospitalization, and death. The hospitalization of these patients can be prolonged, and they are at risk of significant loss of muscle mass and function, even in a short period of immobility. This problem can be especially relevant in elderly patients.
Objectives: to verify the functional performance, quadriceps muscle strength and endurance in adults and elderly people without previous disability who were hospitalized for COVID-19 at the time of hospital discharge
Methods: This is a cross-sectional observational study, in which HU-UFSCar patients over 18 years of age were recruited at the time of hospital discharge, from August 2021 to December 2022. Anamnesis, assessment of functional performance by Short Physical Performance Battery (SPPB) and quadriceps strength and resistance by manual dynamometry.
Results: Thirty-four patients aged 58±14 years were evaluated, 16 of whom were adults and 18 were elderly. The length of stay was 8 (3-61) days, and 11 patients were on invasive mechanical ventilation, 7 of whom were elderly. The mean functional performance was 66% predicted for adults and 44% predicted for the elderly. The 4-meter gait speed and the 5-repetition sit-to-stand test were the components with the greatest impact on the decline in the total SPPB score. Regarding quadriceps isometric muscle strength, the results found were equivalent to 65±25% of predicted, 71% in adults and 57% in the elderly. Regarding the isometric resistance of the quadriceps, the median was 54 seconds, 55 seconds for adults and 48 seconds for the elderly.
Conclusion: It is concluded that patients who survived COVID-19, especially the elderly, whether or not they needed intensive care, had worse functional performance, reduced strength and isometric resistance of the quadriceps.
Implications: These results reinforce the importance of the participation of the physiotherapist in the decision of the patient's hospital

discharge, so that specific strategies and interventions are directed with the objective of early rehabilitation of the patient.
Keywords: Physical functional performance, muscle strength dynamometer, physiotherapy

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DEFINING TEXT NECK: A SCOPING REVIEW

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Background: Text neck is proposed to be one of the causes of neck pain and is regarded as a global epidemic. The term text neck emerged in 2008, and quickly spread through the media worldwide Yet, there is a lack of consensus concerning the definitions of text neck which challenges researchers and clinicians alike. A comprehensive synthesis of how text neck is currently defined may contribute to a better understanding of the term by researchers and clinicians.
Objectives: To investigate how text neck is defined in the peer-reviewed academic literature.
Methods: We conducted a scoping review to identify all articles using the terms "text neck" or "tech neck". Embase, Medline, CINAHL, PubMed and Web of Science were searched from inception to 30th April 2022. This scoping review followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMAScR) guidelines No limitation was applied for language or study design. Data extraction included study characteristics and the primary outcome relating to text neck definitions.
Results: 41 articles were included. Text neck definitions varied across studies. The most frequent components of definitions were grouped into five basis for definition: Posture (n=38; 92.7%), with qualifying adjectives meaning incorrect posture (n=23; 56.1%) and posture without a qualifying adjective (n=15; 36.6%); Overuse (n=26; 63.4%); Mechanical stress or tensions (n=17; 41.4%); Musculoskeletal symptoms (n=15; 36.6%) and; Tissue damage (n=7; 17.1%).
Conclusion: There is substantial variability and lack of clarity in how text neck is defined in the peer-reviewed literature. The literature is characterized by definitions ranging from tissue damage and mechanical stress/tension to musculoskeletal symptoms, overuse and posture. Posture is the defining characteristic of text neck in academic literature and current definitions often mention inadequate posture and overuse. Clinicians and researchers should be aware of the lack of consensus on what constitutes text neck. Since there is neither consensus on the definition nor scientific evidence to support any of the proposed definitions, the term text neck seems to have no clinical value at the present moment.
Implications: From a clinical perspective, text neck seems to be of no scientific value since there is no association between the flexed posture adopted during texting on smartphones and neck pain. Text neck is not an accepted diagnosis and does not seem to be a risk factor for neck pain. pain. From a research perspective, the definition of text neck as a habit of texting on the smartphone in a flexed neck position, regardless of whether the person has neck pain, may be of scientific value for new studies.
Keywords: Neck pain, Smartphone, Posture

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VALIDITY AND RELIABILITY OF THE MOTOR ASSESSMENT SCALE FOR REMOTE ASSESSMENT OF INDIVIDUALS AFTER STROKE – PRELIMINARY RESULT

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Background: After stroke many patients remain with difficulties in using the upper limbs, balance, transfers, and walking. The Motor Assessment Scale (MAS) assess the movements needed to do those activities. Social restrictions to combat the Covid-19 pandemic have increased the telerehabilitation, but the remote assessment is also important for rural areas or geographic regions where neurorehabilitation specialists are scarce, and when patients have difficulties on transport to the clinic. Although the measurement properties of the MAS applied in person are established, the validity and reliability of the MAS applied via teleconsultation is unknown.
Objectives: To investigate the validity and reliability of the *Motor Assessment Scale* (MAS) when administered remotely by videoconference (Tele-MAS).
Methods: This is a study of investigation of measurement properties, following the recommendations of COSMIN, for validity and reliability of Tele-MAS. The sample was 18 participants with a diagnosis of stroke, Braztel-MMSE score $\geq$13 points and with internet access and mobile device. The order of the evaluations (remote or in person) was randomly defined. The application sequence of the MAS items was adapted to allow remote application in addition to verbal commands during the evaluation and a specific instruction manual for application by videoconference was developed. For assessment by videoconference (rater A and B) the participant was instructed to position the camera in a way that the therapist can observe from the ground to above the head. The raters are positioned similarly to the participant to demonstrate the items and score synchronously. The application in person takes place in the participant's house, by rater A. The three collections took place within a period of eight days, with an interval of 2 days. The validity between the in person and remote evaluation was analyzed by Pearson's correlation coefficient and the reliability between the remote and in person evaluation was analyzed using the Bland-Altman limits of agreement. The interrater reliability for the sum of the score of the items was analyzed by the Intraclass Correlation Coefficient